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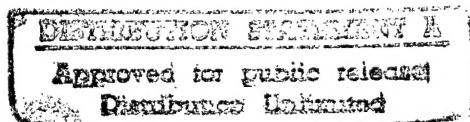
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ALL-UNION CONGRESS OF THE ENTOMOLOGICAL SOCIETY

- USSR -

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FOREWORD

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ALL-UNION CONGRESS OF THE ENTOMOLOGICAL SOCIETY

[Following is the translation of an unsigned article entitled "Vsesoyuzniy s"ezd entomologicheskogo obshchestva" (English version above) in Zashchita rasteniy ot vrediteley i bolezney (Plant Protection against Blights and Diseases), No 4, Moscow, 1960, pages 1-9.]

Soviet Entomology

Much that is notable in the vast treasure-house of the natural science of entomology -- the science of insects -- was discussed comparatively recently. Being very closely related to zoology, entomology reached its greatest differentiation from zoology during the period when the knowledge of the world of living things became not only a theoretical but a practical necessity.

Outstanding scientists from various countries are among its practitioners.

In our country during the last century, the names of A. K. Mandenshtern, Yu. I. Simashko, K. M. Ber, and V. I. Mochul'skiy have stood out as the scientists who have devoted themselves most eminently to the study of Russian fauna, mainly the class of insects, ticks and other organisms which in a greater or lesser degree are agriculturally significant.

These scientists as well as their colleagues understood clearly how important the study of the laws of organic nature, among which those regarding insect fauna have an important place, are for the life and economic activity of mankind.

Each working in his own specialty, these scientists together set themselves broader goals and searched for the possibilities of their realization, particularly in the creation of a scientific society. The tasks of such a society are indicated in one of their program documents as follows: to provide for the dissemination of the scientific knowledge of entomology; to study arthropod organisms, particularly native ones; to study and publish findings on the use of insects, the damage caused by them, and the means of destroying insect blights; to acclimatize useful insects, to draw Russian entomologists closer together and to further their intercourse with foreign naturalists and scientists.

We can say that this document has not lost its significance today, and sounds almost as timely as it did 100 years ago when it originated.

The creation of a scientific society has made the fulfillment of the tasks easier to a significant degree.

Much has been done, and the service of the progressive scientists of that time consists in the fact that Russian entomology has become a world science of the first rank.

On the boundary of two epochs in Russia stand the names of Porchinsky, Semenov-Tyan-Shanskiy, Kholodkovskiy, Kuznetsov, Pospelov, Oshanin, Yakobson, Rimskiy-Korsakov, D'yakonov and many other distinguished scientists who have made worthy contributions to the science of entomology and whose fame has raised still higher the Soviet school of entomologists headed by our distinguished contemporary scientist, Academician Ye. N. Pavlovskiy. In its galaxy are included such scientists as G. Ya. Bey-Biyenko, M. S. Gilyarov, V. P. Vasil'yev, V. V. Popov, Ye. S. Smirnov, V. N. Shchegolev, L. P. Kalandadze, V. N. Stark, D. M. Steynberg, A. A. Shtakel'berg, Ye. V. Zverezomb-Zubovskiy, N. N. Arkhangel'skiy, V. V. Yakhontov and many others who have placed research in ecology, taxonomy, and applied entomology on a high level and have remained eminent in their fields.

Distinguishing features of Soviet entomologists are their close connection with production, and their desire to respond to contemporary inquiry. Actually, is it possible successfully to solve more or less important problems in the development of agriculture -- in plant-growing, animal husbandry, and veterinary medicine -- without them? Above and beyond this, contemporary entomology is in fact connected in the closest way with health protection and other important state affairs, as Academician Ye. N. Pavlovskiy brilliantly indicated in his address to the congress of specialists in this branch of science.

Its interests are directed to the most important tasks of the Seven-Year Plan for the development of the national economy of the USSR, such as raising field harvest and animal husbandry productivity, which directly coincide with the goals of entomological specialists. In addition to the large number of crop blights which are already being combatted, new blights may appear from other wild insect fauna, especially in regions where virgin land is being cultivated. It is not always possible to foresee these and for this reason it is necessary constantly to be on guard against them.

Also from time to time the number of several well-known types of mass blights may increase due to combinations of weather and other conditions favorable to them.

In the world of insects there are useful types (plant pollinizers, honeybees, parasites, carnivorous insects, and others) which are utilized to a great extent in the service of agriculture. On the other hand, a fair amount of insect pests belong to the sanguiverous and parasitic insects and mites which cause great damage in animal husbandry. Many of these are also carriers of diseases dangerous to human beings.

"One and the same type of infectious carrier", says Academician Pavlovskiy, "may be of common concern to both health protection and animal husbandry. This justifies the conclusion that measures to combat such types must be worked out as a unified harmonious system by ento-

mologists, epidemiologists, epizootologists, and veterinarians, taking into consideration the interests of the national economy as a whole and animal husbandry in particular. Such measures must be put into practice under the supervision of agricultural and health protection organs."

In its evolution, entomology has been differentiated into many branches embracing a larger and larger number of problems. In our time it represents a broad complex of scientific disciplines, including general, agricultural, forestry, medical, and veterinary entomology. Apiculture and sericulture are also closely connected.

The scope of its research is always large. We can judge this by the number of published works in the field. More than 4,000 works are published in the world every year, i.e., more than 11 every 24 hours, and in all, according to 1955 data, 200,000 books, articles, and other publications on entomological topics have been published. An object of study is insect classification. There are about one million types in the world, of which not less than 80,000 types are found in the USSR. To them must be added the considerable number of arthropod animal ticks, with which acarology is concerned -- a science which in its goals and methods is closely related to entomology.

Entomology, according to Ye. N. Palovskiy, is the most popular science among a large group of scientists and lovers of nature. Compared to other sciences, entomology as a whole has the largest number of scientific societies devoted to it on the world-wide scale.

Soviet scientists have made a significant contribution to its development. The important achievements obtained in our country in protecting plants from blights and diseases testify to this fact. The locust nightmare which prevailed for centuries over the peasant of Central Asia and many other regions has been obliterated during the years of Soviet power. The service rendered here by native research workers who worked out the theory and practice of combatting this insidious enemy of agriculture is indisputable.

A number of other types of mass blights which formerly were a menace to agriculture have lost at the present time their real significance in the Soviet Union.

Native science has now progressed to the point where the problem of liquidating, in the next few years, wireworms, for example, as mass blights in a majority of regions has been placed on a solid foundation. Such a task would be beyond the strength of capitalist countries with their private ownership of land.

Interest in Soviet research work is extraordinary abroad. The Russian language is being studied with great zeal in order to make possible the reading of the works of our scientists in the original language. Not one international symposium in fields closely connected with the problems of entomology is held without participation of Soviet specialists. Their force and authority has grown parallel with the achievements of our fatherland in the physical and technical sciences, announced to the entire world by the sputniks, missiles, atomic power plants, icebreakers and other great successes.

There is a broad field of activity before Soviet entomologists. At their service are specialized institutes, chairs and laboratories of universities, agricultural, pedagogical, and other higher educational institutions, experimental stations, scientific associations, publishing organs, and finally, which is probably the best of all, broad opportunities for experimentation and the introduction of achievements into production. The task consists in utilizing to the maximum the newest methods of research and the achievements of biology, physics, chemistry, and other sciences so that the fame of Soviet entomology can be still further augmented and exalted.

A Review of the Forces

On the University Embankment in Leningrad, in a group of structures from the time of Peter the Great, is situated a building which for centuries was the focal center for scientists of the Russian Academy. Here for years Mikhail Lomonosov created his wonderful works, here he joined battle with obscurantists and holders of false doctrines, here he enhanced the fame of the Russian people in the sciences, in poetry, and in the arts. Here during this period was created, under his supervision, the mosaic panel entitled "Poltavskaya bataliya", which still maintains its enchantment.

In a small hall of this building, decorated with the portraits of distinguished scientists, a small meeting took place more than 100 years ago which was destined to develop into something more significant. The most distinguished entomologists of the St. Petersburg of that time laid the foundations of their own association, now called the All-Union Society of Entomologists.

Here, after a lapse of a century, entomologists met at the end of January of this year in the very same building -- members of the society came from all parts of the country to review their forces. This time they were not able to find room in the small hall and occupied a larger one -- with 1,000 seats. This was the 4th Congress of the All-Union Society of Entomologists, a congress of scientific officials and practitioners who set as their final goal the distribution of resources and forces for the purpose of helping to augment the natural resources of the people. This was also a congress of those protecting agricultural plants and livestock from insects, ticks, and other animal pests, and, finally, this was a congress of protectors of human health, assisting in building communism. Old and young research workers, scientists, and practitioners, members of the society and guests were present at the congress. At the time of its convening this was a jubilee congress, but its agenda concerned itself within limits with timely problems.

Opening the meeting, the president of the society, Academician Ye. N. Pavlovskiy, began his speech by indicating the special significance of the forum under the conditions of the realization of the great plan for the large-scale growth of the national economy of the

USSR. Having indicated the all-round connection of the science of entomology with other sciences, not alone with the natural sciences, the president emphasized that the fulfilling of tasks having practical significance is based on the solid foundation of theoretical science, in this case entomology. This also conforms with the directions of the party and government, which have assigned a proper place to the development of the theoretical sciences in the powerful process of the growth of Soviet culture.

Having mentioned the successes of the society during its 100-year history and the growing interest it has attracted abroad, the president called on Soviet entomologists to double their efforts in scientific and organizational work, and expressed his assurance that they will be among the leading ranks of workers on the road to the great goals of building communism.

The vice president of the society, G. Ya. Bey-Biyenko, corresponding member from the AN SSSR, in a report entitled "One Hundred Years of the All-Union Society of Entomologists", briefly outlined its history, significance and role in native and world science. The idea of its creation originated in 1846-1847. About this time the amateur entomologist, Colonel A. K. Mandenshtern, and the well-known author of the book Russkaya fauna (Russian Fauna), Pedagogue Yu. I. Simashko, organized in St. Petersburg a small circle of 30 people interested in entomology. The idea of organizing an entomological society was completely formulated by 1848 and a project to draw up its regulations was established. However, international developments and the revolutionary movement in Western Europe, which coincided with the Nikolayev reaction in Russia, delayed this business; the regulations were approved more than 10 years later, and their approval was the legal beginning of the society. The society's first president was the distinguished natural scientists of the 19th century, Academician K. M. Ber, and among the founders were the director of the Zoological Museum of the Academy of Sciences, F. F. Brandt; the well-known traveller and explorer of Siberia, Academician A. F. Middendorf; the distinguished entomologist taxonomist V. I. Mochul'skiy, and others.

The tasks of the society were very clearly formulated. However, some sort of political activity caused them to be prohibited (revolutionary activity, of course). This reflects the intention of the autocracy to nip growing progressive thought in the bud.

It is interesting to note that entomologists even then foresaw the importance of their work of studying the larval forms of organisms, for, as K. M. Ber said in his program report (1860), the relationship of these forms to external nature were much closer, they entered much more deeply into the economics of nature, than developed, already fully grown insects. In 1860 a "Commission on Harmful Insects" was established on the initiative of Academician Ber, which had two basic functions: the compilation of work compendia, including the systematic cataloging of harmful insects, and the working out of measures to combat them; here it was indicated that such measures must not only

be destructive but also preventive. Thus the meaning of prophylaxis was already clearly understood 100 years ago. M. V. Kurdyumov, a member of the society (1917), founder of the Agronomical movement of agricultural entomology, showed in a number of works that harmful insects, the plants which are being cultivated, the life environment of the former and the latter and the interrelationship between them should to an equal degree be the objects of research. He laid the foundation for the study in our country of large groups of useful insects -- the chalcid flies which play a material role in the biological combatting of blights.

Having finished an evaluation of the activity of the society, the vice president listed a number of other important undertakings: the problems of combatting vine phylloxera, beet webworms, wireworms, stink-bugs; the problems of quarantine; the application of biological methods in protecting plants, etc. Also heard were reports of a much broader summary, connected, for example, with the studies of Academician Ye. N. Pavlovskiy on the natural focality [ochagovost'] of human and animal diseases.

Over a period of 100 years, 914 meetings were held, at which a total of about 2,000 scientific reports were heard; 3,050 printed sheets of scientific reports have been published and about 4,300 various other works. The society has at its disposal a most extensive library on entomology and related branches of knowledge. Its resources at the present time amount to 50,000 library volumes.

In the Zoological Institute of the AN SSR is preserved the collection of insects created over many years by the society, which serves as a universally recognized standard in determining types. Thanks to this collection it is possible to obtain competent information on any problem which arises in this field. Over a 100-year period, 8,244 species of arthropod animals have been described in its publications, including 7,749 species of insects. An average of 121 new species are described every year.

The society has the periodical Entomologicheskoye obozreniye (Entomological Review) and participates in the publication of others, for example, Fauna SSSR (Fauna of the USSR) and Opredeliteli po faune SSSR (Classification Keys for USSR Fauna).

Society membership has also increased. At the present time there are 1,500 members, almost 15 times the original number. This has made necessary the creation throughout the country of 18 branches -- in Moscow, Voronezh', Ivanov, Rostov, Sochin, the Ukraine, Belorussia, Siberia, the Far East, Sakhalin, Kazakhstan, Georgia, Azerbaydzhan, the Uzbek Republic, the Kirgiz Republic, the Turkmen Republic, Moldavia, and Latvia.

One of the first reports heard at the plenary session of the congress was that of Academician Ye. N. Pavlovskiy on insects and mites as the most important element of biocoenosis in the natural foci of diseases.

The study, made by this reporter, of natural-focal infections and parasitic diseases originated 20 years ago and applies above all

to the person who may become infected in wild areas or poorly cultivated country. At the very first there appeared to be an unquestionable connection of such human diseases with the diseases of wild ruminants of that etiology. Such diseases are called anthroponozoonotic; their pathogenic agents multiply from ultraviruses both in parasitic grubs and in several insects. It was further discovered that individual diseases such as for example acarid-bite encephalitis and skin leishmaniosis, or rather their pathogenic agents, are transmitted to human beings through the medium of specific carriers, which are several species of black-legged and agrasovyy [unidentified] ticks and phlebotomuses.

It is apparent that the study of these species is closely connected with such branches of entomology as taxonomy, biology, and ecology. The first must provide the scientific determination of the species of carriers, the second their life cycle, and the third the dependence of their life cycle on external media and their biocoenotic links. All this, of course, entails deep faunal research. In combination with other research, it has lead to the creation of a theory of the natural focality of several diseases, the most important element of which is the presence in the biocoenosis of a number of insects and ticks.

It was further found that this theory can also be applied to domestic, household, and industrial animals and fish.

But the most notable conclusion to which other researchers have already come is that the study of natural focality is applicable also to virus diseases of cultured plants. Thus it has been established (D. Valent -- Czechoslovakia) in particular that the big bud of nightshade plants is infected from wild plants by means of insect carriers from reserves of the virus suitable to the cultured nightshade plants. Virus carrying by various cultured plants has been discovered. This also gives us the basis for concluding, the reporter says, that it is advisable to apply the basic aspects of the studies he has elaborated to a detailed study of the natural [virus] reserves of insects. The blights of cultured plants which are cultivated in immediate proximity to each other can be formed from the composition of their fauna. The blight-carrying agent in such cases is the very insect which, in the larval or imago stage, devours the cultured plant.

In the final part of his report, Academician Ye. N. Pavlovskiy made a short survey of the group position of insects and ticks -- of the carriers of the pathogenic agents of natural focal diseases. Here he dwelt on several orders and species of sanguiferous, non-malarial mosquito carriers of viruses of Japanese encephalitis, for example, of the bacteria of tularemia, and of the horseflies of our fauna which contribute to the spread of Siberian ulcer, and others. All these facts speak in favor of the basic idea emphasized by the reporter that entomological research is the solid foundation of many sciences and that the conformity here established has immense significance not only for pure theory but also for practice and the national economy.

Prof. D. M. Shteynberg and Ye. M. Shumakov presented a report on the tasks of entomology in regard to the decisions of the December Plenum of the CC CPSU. Interesting data on the economic significance of combatting blights and diseases were presented in this report. By calculation of the All-Union Institute for the Protection of Plants, our country could by means of plant protection measures produce an additional 50-55 billion rubles worth of agricultural products annually at fixed state prices, two-thirds of which would be derived from grain farming and fruit growing. The figure indicated amounts to approximately 13 percent of the cost of all agricultural products in our country, including animal husbandry. This amount fully compares with loss figures from blights and diseases published recently by the FAO OON [A section of the OTDEL OBSHCHESTVENNYKH NAUK (Social Science Department of the USSR Academy of Sciences)], according to which blights and diseases of agricultural crops on a world scale annually cause the loss of 20 percent of all cultivated produce. Thus, in agriculture the labor of each fifth person in the world is destroyed by natural calamities -- by insect blights and diseases.

Having enumerated other serious measures which are being applied by the Party and the government in improving plant protection in the USSR (the allocation of state budget funds, the organization of a number of specialized institutes, stations, detachments, strengthening oblast (and kray) experimental establishments by entrusting them with propaganda functions and by giving aid to production, increasing the output of poison chemicals, apparatus, etc.), the reporters turned their attention to a number of urgent entomological problems which have arisen in connection with the further development of agriculture and were discussed at the December Plenum of the CC CPSU.

Combatting the cotton boll weevil is the primary concern among these problems. This problem springs up sharply in connection with the broad development of corn crops in cotton-raising regions. Research in this area must apparently be going poorly since not one report on this problem was presented to the congress.

Now, about the stink-bug. This problem has gained especially important significance in connection with tasks to reinforce the production of hard wheat and durum wheat. It is known that the blight referred to is spread mainly over regions where such wheats are cultivated. In any event the bug causes widespread damage there, which is reflected not only in the quantity but also in the quality of the crop. In order to obtain a harvest which meets the demand for hard wheats, side by side with other qualities, the grain damage caused by this bug must not exceed 0.5 percent. This is possible if the average number of bugs before reaping does not exceed 0.5 specimens per square meter of field.

The protection of gardens and vineyards is the next urgent problem. For the former we are concerned with combatting the fruit moth and the San Jose scale, and for the latter, phylloxera. These problems are especially acute for us in connection with the immense development of the indicated branches of agriculture. Further, the

wireworm, which propagates in especially large masses, damages crops planted by the check row method using a planned amount of seeds, and the Colorado potato beetle which has spread beyond the boundaries of its place of origin. All these and several other dangerous blights must be the object of prime attention of entomologists for at least the next few years.

In the report was also mentioned the importance of the further development of the theory of entomology, one part of which requires urgent elaboration and another relates to preparation for the future (scientific "closing up"). The first part concerns the study of the fauna of insects, the appearance of new "unexpected" blights, the application of more effective insecticides and other chemical agents, the biological method, the study of the laws of the adaptability of insects to new environmental conditions, in particular to chemical influences, the problem of the active direction of biocoenosis, and the ontogenesis of insects. The reporters relate to the area of scientific "closing up" the application of atomic energy -- radioactive isotopes in faunal research and in combatting insect blights, the utilization of cybernetics, and other things.

The biochemistry of insects is in the embryonic stage. It is very likely that many species could be utilized as a source of useful chemical substances for man. The authors affirm that still completely unknown resources for the biochemical industry are being opened up in this direction.

In conclusion, emphasis was placed on the problems of coordinating scientific research work in the entomological area and the training of cadres. The All-Union Society of Entomology must speak up for making serious improvements in this matter.

The Plenary and Sectional Meetings

Meetings were held from 26 January to 3 February at which in all more than 100 reports and scientific observations were heard. It is not possible to enumerate all of them but we shall discuss the most important.

Prof B. V. Dobrovolskiy (MGU) [Moskovskiy Gosudarstvenniy Universitet - Moscow State University] reported on the study on the focality of diseases and its application to insects harmful to plants.

The author spoke on the research conducted over many years on zones and foci of blight carrying in 80 species of insects and ascertained that here the basic validity of this idea which arose from the study by Ye. N. Pavlovskiy maintained its significance -- the coordination [priurochennost'] of foci and zones to sectors of a determined geographical area. The knowledge of this regularity in natural law has great significance for agricultural regionalization and for working out zonal systems of plant protection measures.

Prof Ye. S. Smirnov (MGU) reported on the mechanism of inheritance of acquired characteristics in insects. On the basis of his

own experiments with greenhouse aphids and other data, the author established that characteristics were inherited as the consequence of the transfer of aphid cultures from certain fodder plants, vetches, to others, the red pepper, for example, during which was observed a two-phase rhythm, the knowledge of which makes it possible to attempt the preliminary classification of phenomena of the inheritance of acquired characteristics.

In a report on the theoretical bases of taxonomy, Prof. Ye. S. Smirnov proposed the guidance by accurate mathematical methods in determining taxonomic indicants which are necessary for the ascertainment of species.

Honored Scientist Prof D. M. Fedotov (Moscow) gave a report on the phylogenetic relationships in the insect class and in the phylum arthropodia as a whole.

Prof B. B. Rodendorf (Moscow) spoke on the topic "Contemporary Data on the Taxonomic System of Insects." Basic thought on this leads to the conclusion that the entire system as a whole has been well studied. The suborder and order units of Palaeoptera and the cohorts of orthopterous specimens are relatively less well known than others. This, in the opinion of the reporter, determines the next assignments of taxonomists.

A. S. Danilevskiy (Leningrad) spoke on the ways and means of applying ecological-faunal data to the analysis of phenological and ecological-geographical mechanisms, and on how new characteristics of insect species are formed in different geographical conditions.

Prof I. Ya. Polyakov (All-Union Institute for the Protection of Plants) presented a report on the dynamics of blight insect number and the factors which determine it. The author thinks that there is a slight connection between the type of trend of the number of individual species, their biological characteristics, and those criteria which are taken into consideration in predicting the multiplication of insect pests. He presents as possible the dividing of the more massive blights of agricultural crops into six groups, to each of which is attached a more or less determined characteristic, allowing the basic approaches to the long-term prediction of their number to be systematized.

The always real problem concerning the procedures for protecting grain crops in zones of virgin lands and lands long fallow found a detailed elucidation in the report of T. G. Grigor'yeva (All-Union Institute for the Protection of Plants). The author recommends for substantiating these procedures that the absence of an established system of agriculture and the narrow specialization of grain farming be taken into consideration, also the dynamics of ecological circumstances, on the background of which the specialization of fauna in the biocoenoses of wheat takes place. She mentioned also the adaptive (time-serving) characteristics of blight populations and the delay in the colonization [of blights] in wheat crops by useful elements of fauna. All this taken together determines the basic tasks: the regulation of agronomy techniques, the introduction of the zonal system of agriculture, the introduction of the biological

method of combatting blight, in particular the utilization of parasitic hymenopters and flies by means of the belt sowing of wheat fields with the sunflower or other types of nectar-bearing plants, and the chemical method -- the presowing processing of seeds with preparations of complex activity in improved pickling machines.

Prof S. I. Medvedev (Khar'kov) presented a report on the theme "The Alteration in the Terrain of the USSR and Mass Blights (in the Example of Forest-steppe and Steppe Zones)." He stated that in the basic agricultural zones, especially during past years, great alterations in the terrain have taken place due to the intensive agricultural and industrial utilization of the soil. As a result of this and a number of accompanying causes there appeared a strong decrease in the specific composition of primary entomofauna. However, more favorable conditions have been created for several species than on virgin soil (for example, for the inhabitants of broken soils and several other ecological forms), and a part of them have here multiplied greatly and may in time become a serious danger to agriculture. Agrotechnical procedures may have an unfavorable influence also on several useful insects. There are also a number of other characteristics of the forming of fauna of the cultured terrain, a knowledge of which is necessary for any practical activity.

Prof V. N. Stark (Leningrad) presented a detailed report entitled "The Influence of Forestry Measures in the Forest on the Dynamics of Insect Fauna which Damage Agricultural Crops."

Kh. M. Khaberman (Tartu), Active Member of the Academy of Sciences of the Estonian SSR, delivered an observation on the comparative study of biocoenoses.

3. A. Viktorov (Institute of Animal Morphology imeni A. N. Severtsov of the Academy of Sciences, USSR) devoted his report to biocoenosis and the problems of insect number. As do the majority of ecologists, he feels that parallel with the purely exogenous (external genesis) causes there are also determined regulatory mechanisms which bring about a decrease in number during its rise or, vice versa, an increase during its abatement. These mechanisms provide for the existence of the species in spite of the sharp negative influences of natural factors as well as the destructive measures carried out by man. Of great significance are, of course, climate and several other causes. The set of reactive factors which regulate the number of insects changes regularly, depending on the circumstances of the species in regard to food.

One must build a system of measures to combat blight species by taking these factors into consideration.

The report of Prof N. A. Telenga (UIZR) [Ukrainskiy institut zashchitny rasteniy -- Ukrainian Institute for the Protection of Plants] was on the problems of the biological method of combatting blights. The author considered important the enrichment of fauns with useful species on the basis of utilizing local entomophages by means of intra-areal migration. Success can be obtained to a significant degree, as has been confirmed by experiments abroad (Canada), in the mass multi-

plication of entomophages under artificial conditions, but this requires that the method be mastered. Also important are the introduction and acclimatization of entomophages for the suppression of the multiplication of especially dangerous quarantine blights (the Colorado potato beetle and the white moth).

Prof Ya. I. Prints (Institute of Biology of the Moldavian Affiliate, Academy of Sciences, USSR, Kishinev), dealt with the problem of phylloxera and threw light on the problem of the study of the resistance of plants to insects and ticks in connection with the breeding of resistant forms. In his opinion, the best methods of combatting the blights and diseases of agricultural plants are the selection and breeding of resistant and immune forms, especially of plants which are both resistant to their basic blights and diseases and at the same time have other high agricultural qualities. Showing this by an example with grapes (the hybrid Rara Nyagre x Amoor, bred by the author), which is resistant to Phylloxera, mildew, fungus, and botrytis, Ya. I. Prints believes that group resistance is needed and can also be obtained on apple trees to the wooly apple aphid, the clear-winged moth, malybugs, the black canker, scab, and powdery mildew. The same can be expected for wheat in regard to the Hessian fly and frit flies, rust and smut.

The experiments of the author permits him to speak with certainty on the correct direction he has found in solving the problem under study.

Great interest was given the report of the deputy chief of the State Inspectorate for Quarantine and Plant Protection of the Ministry of Agriculture, USSR, I. A. Churayev entitled "On the Contemporary Status and Tasks of Protecting the Territory of the USSR from Quarantined Blights." In particular, the report presented data which showed the importance of the work carried out in the quarantine of foreign plants. Thus in 1957, 2,073 objects of quarantine were spotted in plant products entering the country from abroad (blights, diseases, and weeds); in 1958, there were 2,737 such objects, and among the individual species first place was occupied by the bruchid weevil, and then the fruit moth, the San Jose scale, and others. In conclusion the author indicated the necessity for reinforcing and perfecting external quarantine measures, which must be accompanied by a raising of the level of scientific research work.

G. M. Razvyazkina (Moscow) in a report on the role of insects in the spread of viruses and the development of virus epiphytes called attention to the urgency of studying insect control -- control of the carriers of virus diseases of plants.

G. A. Mazokhin-Porshnyakov (Institute of Biophysics of the Academy of Sciences, USSR) acquainted the congress with new data from his research on the color vision of insects and of the curved spectral sensitivity of the eyes of the imago of dragonflies worked out by him. The principal possibility of determining how the eyes of any given insect discriminate colors is through biophysics and may have important practical significance.

Other reports and scientific observations at the sectional meetings and symposiums were always pithy: Prof M. S. Gilyarov (Institute of Animal Morphology imeni A. N. Severtsov of the Academy of Sciences, USSR) reported on the characteristics of complex soil-inhabiting insects of the basic soil zones of the European part of the USSR; Corresponding Member of the Academy of Agricultural Sciences of the Georgian SSR; Corresponding Member of the Academy of Agricultural Sciences of the Georgian SSR, I. D. Batiashvili (Tbilisi) spoke on the contemporary status of the study of fruit blights in Georgia and the ways of solving several scientific problems; Prof I. A. Rubtsov (Leningrad) spoke on primary tasks in entomophage research; Prof B. B. Rodendorf spoke on paleoentomology and its development; A. I. Popova (All-Union Society of Entomology, Leningrad) spoke on the problem of the effective combination of chemical substances with auxilliary nutrition outside the root; V. A. Rider (Voronezh) spoke on the mechanical application of small doses of hexachlorane to the soil together with fertilizers in combatting wireworms and pseudowireworms which damage corn and sunflowers; Prof L. V. Arnold'i (Leningrad) spoke on the biogeographical regionalization of Central Kazakhstan on the basis of ecological and biocoenotic research in entomology; O. I. Petrukhi (Kiev) spoke on the contemporary status and tasks of combatting sugar beet blights in the USSR; B. A. Gerasimov (Moskovskaya oblast) reported on the contemporary status and the outlook for working out a system of measures for protecting vegetable crops from blights; P. M. Rafesa (Forestry Institute of the Academy of Sciences, USSR) reported on typology of the multiplication foci of forest blights; A. V. Prisazhnyuk (Belorussia) spoke on the application of DDT and GKhTsG [hexachlorocyclohexane] preparations against the larva of scarabaeids in forests; I. Z. Livshits (Krymskaya oblast) reported on the combatting of fruit orchard blights with chemicals; and Ye. P. Tsyplenkov (All-Union Institute for the Protection of Plants) spoke on the locust problem in the USSR. These are some of the reports.

Six sections functioned at the congress: general agriculture, forestry, medical and veterinary entomology, common and useful insects, and biological control methods. [sic]

There were also joint meetings of sections on methodological problems, thematic meetings on the problems of the physiology, morphology, evolution and taxonomy of insects, a discussion, lead by A. S. Danilevskiy, on the subject of the experimental analysis of the phenology and geographical spread of insects and ticks, and a symposium on corn blights and measures to combat them.

In the General Entomology Section (Prof M. S. Gilyarov, leader) was heard a group of reports on soil fauna, among which was the report of I. V. Stebayev (Institute of Animal Morphology imeni A. N. Severtsov of the Academy of Sciences, USSR); it was ascertained in this report that blight insects played an important role in the very first stages of the soil formation process.

The observations of researchers on fossils attracted attention. It was shown that winged insects originated significantly earlier than the carboniferous period and have been found in Devonian deposits. A study (by L. M. Semenova) of the characteristics of the structure of deposits containing the representatives of various groups of insects has value. It was established that in the majority of land insects which live in the open, the cuticula is practically non-permeable for water, salts, etc. This is very important in understanding the action mechanism of contact chemical substances used against blights.

A series of reports (by S. I. Medvedev and others) on the geographical distribution of insects permitted important conclusions to be reached for the regionalization of agricultural crop insect blight complexes.

In the Agricultural Entomology Section, theoretical and practical problems of plant protection were discussed.

S. G. Kozhevnikov (Krasnoyarskiy Kray Agricultural Administration) mentioned among other things the insufficient study of the eastern zone of the Soviet Union, which was apparent from a comparison of reports (the majority being on the European part of the USSR) and the dislocation of scientific research establishments (one in the eastern zone and 11 in the European part).

M. I. Kosobutskiy (Uzbekistan) considered it useful not to forget about soil, and its characteristics by zones in the study of the action of GKhTsG on blights and plants. For example, GKhTsG [hexachlorocyclohexane] loses its toxicity quite rapidly in limed soils. The pickling of seeds, according to his data, stimulates the growth of plants but at the same time also lowers their resistance to blights.

It was mentioned in the many other reports and addresses at this section in general that the agriculture and forestry of the country has born immense losses from blights (and diseases), and that there are large unutilized reserves for obtaining additional production. Well-known results have been achieved in combatting a number of mass blights, among which the chemical method has played an important role and produces an expected and high effect when applied correctly. But there are still serious shortcomings. Among them are the following: weak propaganda and slow introduction into production of the achievements of science and experience; gaps in the economic substantiation of recommended measures; unsatisfactory organization in the appraisal of new chemical preparations and delay in their production; and insufficient working out of the theory of the chemical method of plant protection, which frequently brings with it undesirable practical results. In this connection the study of preparations for use not only on individual blights, but on the biocoenosis of a given crop as a whole is recommended. The chemical method must have the character of a system which suppresses the entire complex of blights infesting the respective crops, and which wards off insect populations which develop resistance to poisons.

The necessity for cautious application of chemical agents to vegetable crops and the reinforcement of the search to find poisons less harmful to human beings was emphasized.

The symposium on corn naturally attracted much attention; 102 representatives from all zones of the Soviet Union participated in it. Instead of the planned eight reports, 18 were heard.

A survey of the status of research on and the outlook in corn blights was made by I. D. Shapiro (All-Union Institute for the Protection of Plants). Other reports were devoted to faunal research and to the biocoenotic connections of insect pests in new and old corn crop regions and to the study of the nature of the resistance of varieties to blights, primarily to frit-flies, corn borers, and wireworms. Many speakers made valuable observations on methods of protection -- agro-technical and chemical -- against soil-inhabiting pests, the cotton boll weevil and grain moths. The appearance of the polyphagious grey weevil, formerly seen, was mentioned. New tasks in agronomy techniques and in chemical treatment are arising in connection with the transition in the sowing of a set amount of seeds and in condensed crop rotation and in as much as corn is becoming steam processed in stubble, in harvesting, and in repeated [sowing] in many regions, and in a number of multicropped farms. It is necessary to prevent the danger of mass multiplication of blight-carrying insects, especially of winter and other subgnawing [podgryzayushchiy] noctuids. This requires devoting more attention to combatting weeds -- the main reservoirs of blights. Here more attention is being given herbicides, among which there is special interest in simazin /symasin or simasin/ and atrasin?/atrazin/ which completely destroy the weed plant (on which the eggs are laid and the winter and other subgnawing noctuids feed) than is being devoted to the danger of mass multiplication of insects. It is also important to prevent the multiplication of the corn borer, which may be brought about to a large degree by sanitary and prophylactic measures -- by cutting the stalk low during harvesting, followed by deep autumn plowing of sections with a careful closing of the stumps, and the economic utilization of the corn stalks until the beginning of the departure of the butterflies, that is, no later than the first half of May.

The application of granulated DDT and aerosols are also recommended.

In cotton-growing regions there is the urgent problem of combatting the cotton boll weevil which may breed in corn fields. The latter circumstance may also be turned against the blight, for example, by practicing the baiting sowing of corn in order to destroy the weevil in infected sections with the harvesting of the crop at determined periods in the silo.

The grain moth (as reported in his address by L. P. Kalandadze, academician of the Georgian Academy of Agricultural Sciences) in several southern regions is not only a danger to stored crops but also to crops still in the fields.

Important problems relating to the protection of forests were discussed in the Forestry Entomology Section.

Lively discussions by specialitiess also took place in other sections. In appraising the congress as a whole, and its plenums, sections, and symposiums, we must mention their business-like and highly scientific level. The distinguishing characteristic of this congress as compared to former ones is the fact that tasks having a practical production significance were more fully discussed along with more

or less remote scientific and theoretical problems. It proceeded under the banner of the decisions of the Party and the government regarding the further development of agriculture.

The congress resolved to present to directive organs for examination a number of proposals on the expansion of the production of preparations of diene synthesis, on combatting grain crop blights, (in new land cultivation regions), corn, fruit, grape, forest and field-protecting forest plants blight, blights in apiculture and sericulture, the warble fly and midges. Commissions staffed by leading specialists should be set up to elaborate the proposed project.

A new staff for the Council of the All-Union Entomological Society was elected, which included Academician Ye. N. Pavlovskiy and G. Ya. Bey-Biyenko, corresponding member of the Academy of Sciences, USSR, and many other distinguished entomological scientists. Present at the congress were 708 specialists (409 members of the Society), among which were 11 academicians and corresponding members, 60 doctors, and 305 scientific candidates.